

Amendments to the Specification:

Please amend the specification as follows:

Before paragraph number 0002 please insert the following:

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

This application is a Continuation of US Application 9/694,302, filed 10/24/2000, incorporated herein by reference in its entirety, and claims priority to Japanese applications JP 2000-99098, filed 03/31/2000, incorporated herein by reference in its entirety, and JP 11-303195, filed 10/25/1999, incorporated herein by reference in its entirety.

Please replace paragraph number 0003 with the following rewritten paragraph:

Fig. 17 schematically shows an example of a sensor system in which sensor bodies of fiber type photoelectric sensors (hereinafter simply referred to as “sensor bodies”) are arranged in contact with each other to form a row. As can be seen from Fig. 17 ~~the figure, a plurality of sensor bodies 402 for detecting different objects are arranged in a row in the transverse direction~~ on a DIN rail 401 mounted in the control panel, ~~a plurality of sensor bodies 402₁, 402₂, 402₃, ... 402_n for detecting different objects are arranged in a row in the transverse direction.~~ From a front surface of each of the sensor bodies 402 ~~402₁, 402₂, 402₃, ... 402_n~~, optical fibers 403 and 404 constituting outgoing and returning paths for the detection beam, respectively, are drawn out, and from the rear end surface of the case, an electric cord 405 including a power feed line 405a and a signal line 405b (see Fig. 18) is drawn out

Please replace paragraph number 0005 page 2 at line 10 with the following rewritten paragraph:

Further, as shown in Fig. 18, power supply from a power source 406 to each of the sensor bodies 402 ~~402₁, 402₂, 402₃, ... 402_n~~ is effected through the power feed line 405a. Power feed line 405a includes two, that is, positive and negative, lines.

Please replace paragraph number 0006 with the following rewritten paragraph:

In this manner, in the conventional photoelectric sensor systems in which a number of sensor bodies 402 ~~402₁, 402₂, 402₃, ... 402_n~~ are arranged aligned with each other and in

contact with each other, it is necessary to supply power to each of the photoelectric sensor bodies 402 ~~402₁, 402₂, 402₃, ... 402_n~~ through power feed line 405a in the electric cord. Therefore, for the electric cord, a cord having a large number of core lines is ~~neecessar~~ necessary, and, in addition, it takes time and labor just to connect these lines.

Please replace paragraph number 0052 with the following rewritten paragraph:

As described above, according to the present invention, the power feed line is unnecessary for the connectors other than the main connector. Therefore, the number of power feed lines can significantly be reduced for the overall system. Further, ~~as the~~ because sensor bodies ~~of common~~ having the same structure ~~same for the~~ are employed for both the main and sub sensors ~~are employed~~, the cost can be reduced and the inventory management is made easier. Further, if a failure occurs in any of the sensor bodies, it is possible to simply exchange the defective sensor body only, while maintaining the electric cords used up to that point in time ~~point~~.

Please replace paragraph number 0076 with the following rewritten paragraph:

The sensor system includes a plurality of sensor bodies 1 (1b, 1a₁ to 1a_n) arranged aligned and in contact with each other, and a plurality of connectors (one main connector 3 and a plurality of sub connectors 2 ~~2₁ to 2_n~~) that are detachably coupled to the sensor bodies 1 and detachably coupled to neighboring connectors with each other.

Please replace paragraph number 0077 with the following rewritten paragraph:

Sensor bodies 1 are arranged in tight contact with each other on a DIN rail 4, in this example. To the sensor body 1b which is arranged at an end portion of the system (left end of the figure when viewed from the front), a main connector 3 is connected. A plurality of sensor bodies 1a₁ to 1a_n arranged aligned and in contact with each other to form a row following the right side of the sensor body 1b are connected to sub connectors 2 ~~2₁ to 2_n~~.

Please replace paragraph number 0085 with the following rewritten paragraph:

On the upper surfaces of connectors 2 and 3, elastic projection pieces 204 and 304 having a stepped portion are provided, respectively. At a ceiling surface, ~~not shown~~, 13a of

the joint 13 for connector of sensor body 1, an engaging piece for engaging with the elastic projection pieces 204, 304 at the stepped portion is provided. This prevents disengagement of the connectors 2, 3 with the sensor body 1, when the connector and the sensor body are connected.

Please replace paragraph number 0089 with the following rewritten paragraph:

A pair of claw-shaped projection pieces 201a and 201b extending horizontally toward the front connector housing 20a protrude from upper and lower end portions of rear connector housing 20b. The claw-shaped projection pieces 201a and 201b are engaged with engaging projections ~~20a~~ 202a and ~~20b~~ 202b provided at upper and lower end portions of the front connector housing 20a, whereby disengagement or slipping of the connector housing 20a and 20b, when the housing are coupled, is prevented.

Please replace paragraph number 0114 with the following rewritten paragraph:

Referring to Fig. 1, for the nth sub connector 2n arranged on the right end of the sensor system when viewed from the front side of this figure, there is no neighboring sub connector on the right side. Here, the power is passed from the nth sub connector 2n only to the sensor body 1.

Please replace paragraph number 0116 with the following rewritten paragraph:

Main connector 3 is in many ~~respect~~ respects, similar to sub connector 2. Therefore, portions having the same structure as those of sub connector 2 will be represented by the reference characters common in the lower one digit (when the reference character consists of two digits) or lower two digits (when the reference character consists of three digits) to those used in the description of the sub connector 2, and detailed descriptions will not be repeated. For example, the stopper ring in Figs. 10A and 10b is denoted by reference character 31.

Please replace paragraph number 0121 with the following rewritten paragraph:

The mechanical and electrical connecting structures for the neighboring connector provided on one side (closer to the main connector) of the sub connector have projected shapes, and the mechanical and electrical connecting structure with the neighboring connector

provided on the other side (farther from the main connector) of the sub connector have recessed shapes to receive the protrusions. Further, the mechanical and electrical connecting structures provided only on the right side of the main connector also have the recessed shapes. Therefore, in the row of connectors formed by mutually connecting these connectors, the connecting structure of the nth sub connector positioned on the right end (represented by 2n in Fig. 1) does not have the protruded portion on the side where the neighboring connector does not exist.

Please replace paragraph number 0129 with the following rewritten paragraph:

As can be seen from the figure, a control output and an analog output transmitted from the sensor body 1 (1b, 1a₁, 1a₂) to which the main connector 3 or the sub connector 2 (~~2₁, 2₂~~) is connected are passed through internal conductor piece 35a, 35c, 25a or 25c for the signals of each connector and signal terminal pins 14a, 14c to signal lines 8a, 8b. Accordingly, signal transmission from the sensor body 1 (1b, 1a₁, 1a₂) to control device such as a PLC, becomes possible.

Please replace paragraph number 0131 with the following rewritten paragraph:

At the same time, the power introduced from power lines 9a and 9b of main connector 3 is passed through power conductor pieces 35b and 35d of main connector 3 to power receiving terminal portions 253b and 253d of the first neighboring sub connector 2 [[2₁]]. Further, the power received by the power receiving terminal portions 253b and 253d of the first neighboring connector 2 [[2₁]] is passed through power internal conductor pieces 25b and 25d to power receiving terminal pins 14b and 14d of sensor body 1a₁. Thus, the power introduced from electric cord 9 (power lines 9a, 9b) to main connector 3 is supplied to the circuit board in sensor body 1a₁.

Please replace paragraph number 0132 with the following rewritten paragraph:

Further, the power received at power receiving terminal portions 253b and 253d of first sub connector 2 $[[2_1]]$ is passed through the power internal conductor pieces 25b and 25d of first sub connector 2 $[[2_1]]$ to power receiving terminal portions 253b and 253d of the neighboring sub connector 22. The power received by the power receiving terminal portions 253b and 253d of the neighboring second sub connector 2 $[[2_2]]$ is passed through power internal conductor pieces 25b and 25d of the second sub connector 2 $[[2_2]]$ to power receiving terminal pins 14b and 14d of sensor body 1a₂. Accordingly, the power introduced to main connector 3 is supplied to the circuit board of sensor body 1a₂.

Please replace paragraph number 0133 with the following rewritten paragraph:

In this manner, in the sensor system in accordance with the present embodiment, the power introduced to the main connector 3 is successively passed to the plurality of sub connectors 2 (~~21—2n~~) arranged in contact with each other to form a row following main connector 3, and further supplied to the circuit boards of the sensor bodies 1 (1b, 1a₁, to 1a_n) to which the connectors 2 and 3 are connected. More specifically, by the connector system of the main connector 3 and a plurality of sub connectors 2, a power supply line is implemented.

Please replace paragraph number 0134 with the following rewritten paragraph:

The structure of the sensor system in accordance with the embodiment described above can be schematically represented by Fig. 15. More specifically, the power supplied to main connector 3 is supplied through the row of connectors consisting of the main connector 3 and the plurality of sub connectors 2 ~~2n₁ to 2n~~ to the circuit boards in the sensor bodies 1 (1b, 1a₁ to 1a_n) to which respective connectors are connected, and therefore it becomes unnecessary to connect a power feed line (power feed lines 9a, 9b of electric cord 9) to each sensor. Thus, the number of power feed lines for the overall system can significantly be reduced.

Please replace paragraph number 0136 with the following rewritten paragraph:

Each connector 2, 3 is detachably coupled to sensor body 1. Therefore, when a sensor body fails as schematically shown by the reference character $1a_3$ in the figure, it is possible to simply exchange the failed sensor body $1a_3$, while maintaining the third electric cord 8 $[[8_3]]$ which has been connected to connector 2 $[[2_3]]$.